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An elongated truss boom structure is adapted to be flattened and coiled to a stowed configuration. The truss boom includes longerons, battens, and diagonals. A fixed ladder shaped structure is formed by a plurality of fixedly coupled battens which interconnect two adjacent longerons. The truss boom is flattened for stowage by arranging all of the longerons coplanar to the plane of the fixed ladder shaped structure. The longerons preferably have a corrugated cross section. For stowage the longeron is heated and compressed into a ribbon shaped cross section, and upon deployment the longeron is heated to restore its corrugated cross section. A mechanical assembly machine includes a drum, a stowed flattened truss boom rolled into a coil around the drum, a device for unrolling the coil, an actuating and locking mechanism, and a control arm which connects the actuating and locking mechanism to the drum.